SEQUENCE LISTING

<110> Curtis, Rory A. J.

<120> 33410, A NOVEL HUMAN CARBOXYLESTERASE
FAMILY MEMBER AND USES THEREOF

<130> 10448-081001

<140> US 09/934,323
<141> 2001-08-21

<150> US 60/226,774
<151> 2000-08-21

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<170> FastSEQ for Windows Version 4.0

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gcctgccttc accttctccc acttccttcc ccttccccac cccgtgcccc ctccatggag    240
aggaacagac cccttctctg tccagtctaa cccaggtccc tccccaaccc cctcctcct    300
cctttcccc cgccctcct ccctcctggg gcgagggggg cctccctccc tctcccccc    360
ttctctctct ctccgagggg gggggtccc agggaggggag ggggggtccc ccgatcagc    419
atg tgg ctc ctg gcg ctg tgt ctg gtg ggg ctg gcg ggg gct caa cgc    467
Met Trp Leu Leu Ala Leu Cys Leu Val Gly Leu Ala Gly Ala Gln Arg
 1               5                  10                  15

ggg gga ggg ggt ccc ggc ggc ggc gcc ccg ggc ggc ccc ggc ctg ggc    515
Gly Gly Gly Gly Pro Gly Gly Gly Ala Pro Gly Gly Pro Gly Leu Gly
                20                  25                  30

ctc ggc agc ctc ggc gag gag cgc ttc ccg gtg gtg aac acg gcc tac    563
Leu Gly Ser Leu Gly Glu Glu Arg Phe Pro Val Val Asn Thr Ala Tyr
            35                  40                  45

ggg cga gtg cgc ggt gtg cgg cgc gag ctc aac aac gag atc ctg ggc    611
Gly Arg Val Arg Gly Val Arg Arg Glu Leu Asn Asn Glu Ile Leu Gly
        50                  55                  60

ccc gtc gtg cag ttc ttg ggc gtg ccc tac gcc acg ccg ccc ctg ggc    659
Pro Val Val Gln Phe Leu Gly Val Pro Tyr Ala Thr Pro Pro Leu Gly
 65                  70                  75                  80
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gcc cgc cgc ttc cag ccg cct gag gcg ccc gcc tcg tgg ccc ggc gtg          707
Ala Arg Arg Phe Gln Pro Pro Glu Ala Pro Ala Ser Trp Pro Gly Val
                85                  90                  95

cgc aac gcc acc acc ctg ccg ccc gcc tgc ccg cag aac ctg cac ggg          755
Arg Asn Ala Thr Thr Leu Pro Pro Ala Cys Pro Gln Asn Leu His Gly
            100                 105                 110

gcg ctg ccc gcc atc atg ctg cct gtg tgg ttc acc gac aac ttg gag          803
Ala Leu Pro Ala Ile Met Leu Pro Val Trp Phe Thr Asp Asn Leu Glu
            115                 120                 125

gcg gcc gcc acc tac gtg cag aac cag agc gag gac tgc ctg tac ctc          851
Ala Ala Ala Thr Tyr Val Gln Asn Gln Ser Glu Asp Cys Leu Tyr Leu
            130                 135                 140

aac ctc tac gtg ccc acc gag gac ggt ccg ctc aca aaa aaa cgt gac          899
Asn Leu Tyr Val Pro Thr Glu Asp Gly Pro Leu Thr Lys Lys Arg Asp
145                 150                 155                 160

gag gcg acg ctc aat ccg cca gac aca gat atc cgt gac cct ggg aag          947
Glu Ala Thr Leu Asn Pro Pro Asp Thr Asp Ile Arg Asp Pro Gly Lys
                165                 170                 175

aag cct gtg atg ctg ttt ctc cat ggc ggc tcc tac atg gag ggg acc          995
Lys Pro Val Met Leu Phe Leu His Gly Gly Ser Tyr Met Glu Gly Thr
                180                 185                 190

gga aac atg ttc gat ggc tca gtc ctg gct gcc tat ggc aac gtc att         1043
Gly Asn Met Phe Asp Gly Ser Val Leu Ala Ala Tyr Gly Asn Val Ile
            195                 200                 205

gta gcc acg ctc aac tac cgt ctt ggg gtg ctc ggt ttt ctc agc acc         1091
Val Ala Thr Leu Asn Tyr Arg Leu Gly Val Leu Gly Phe Leu Ser Thr
            210                 215                 220

ggg gac cag gct gca aaa ggc aac tat ggg ctc ctg gac cag atc cag         1139
Gly Asp Gln Ala Ala Lys Gly Asn Tyr Gly Leu Leu Asp Gln Ile Gln
225                 230                 235                 240

gcc ctg cgc tgg ctc agt gaa aac atc gcc cac ttt ggg ggc gac ccc         1187
Ala Leu Arg Trp Leu Ser Glu Asn Ile Ala His Phe Gly Gly Asp Pro
                245                 250                 255

gag cgt atc acc atc ttt ggt tcc ggg gca ggg gcc tcc tgc gtc aac         1235
Glu Arg Ile Thr Ile Phe Gly Ser Gly Ala Gly Ala Ser Cys Val Asn
            260                 265                 270

ctt ctg atc ctc tcc cac cat tca gaa ggg ctg ttc cag aag gcc atc         1283
Leu Leu Ile Leu Ser His His Ser Glu Gly Leu Phe Gln Lys Ala Ile
            275                 280                 285

gcc cag agt ggc acc gcc att tcc agc tgg tct gtc aac tac cag ccg         1331
Ala Gln Ser Gly Thr Ala Ile Ser Ser Trp Ser Val Asn Tyr Gln Pro
            290                 295                 300
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ctc aag tac acg cgg ctg ctg gca gcc aag gtg ggc tgt gac cga gag      1379
Leu Lys Tyr Thr Arg Leu Leu Ala Ala Lys Val Gly Cys Asp Arg Glu
305                 310                 315                 320

gac agt gct gaa gct gtg gag tgt ctg cgc cgg aag ccc tcc cgg gag      1427
Asp Ser Ala Glu Ala Val Glu Cys Leu Arg Arg Lys Pro Ser Arg Glu
                325                 330                 335

ctg gtg gac cag gac gtg cag cct gcc cgc tac cac atc gcc ttt ggg      1475
Leu Val Asp Gln Asp Val Gln Pro Ala Arg Tyr His Ile Ala Phe Gly
                340                 345                 350

ccc gtg gtg gat ggc gac gtg gtc ccc gat gac cct gag atc ctc atg      1523
Pro Val Val Asp Gly Asp Val Val Pro Asp Asp Pro Glu Ile Leu Met
                355                 360                 365

cag cag gga gaa ttc ctc aac tac gac atg ctc atc ggc gtc aac cag      1571
Gln Gln Gly Glu Phe Leu Asn Tyr Asp Met Leu Ile Gly Val Asn Gln
370                 375                 380

gga gag ggc ctc aag ttc gtg gag gac tct gca gag agc gag gac ggt      1619
Gly Glu Gly Leu Lys Phe Val Glu Asp Ser Ala Glu Ser Glu Asp Gly
385                 390                 395                 400

gtg tct gcc agc gcc ttt gac ttc act gtc tcc aac ttt gtg gac aac      1667
Val Ser Ala Ser Ala Phe Asp Phe Thr Val Ser Asn Phe Val Asp Asn
                405                 410                 415

ctg tat ggc tac ccg gaa ggc aag gat gtg ctt cgg gag acc atc aag      1715
Leu Tyr Gly Tyr Pro Glu Gly Lys Asp Val Leu Arg Glu Thr Ile Lys
                420                 425                 430

ttt atg tac aca gac tgg gcc gac cgg gac aat ggc gaa atg cgc cgc      1763
Phe Met Tyr Thr Asp Trp Ala Asp Arg Asp Asn Gly Glu Met Arg Arg
                435                 440                 445

aaa acc ctg ctg gcg ctc ttt act gac cac caa tgg gtg gca cca gct      1811
Lys Thr Leu Leu Ala Leu Phe Thr Asp His Gln Trp Val Ala Pro Ala
450                 455                 460

gtg gcc act gcc aag ctg cac gcc gac tac cag tct ccc gtc tac ttt      1859
Val Ala Thr Ala Lys Leu His Ala Asp Tyr Gln Ser Pro Val Tyr Phe
465                 470                 475                 480

tac acc ttc tac cac cac tgc cag gcg gag ggc cgg cct gag tgg gca      1907
Tyr Thr Phe Tyr His His Cys Gln Ala Glu Gly Arg Pro Glu Trp Ala
                485                 490                 495

gat gcg gcg cac ggg gat gaa ctg ccc tat gtc ttt ggc gtg ccc atg      1955
Asp Ala Ala His Gly Asp Glu Leu Pro Tyr Val Phe Gly Val Pro Met
                500                 505                 510

gtg ggt gcc acc gac ctc ttc ccc tgt aac ttc tcc aag aat gac gtc      2003
Val Gly Ala Thr Asp Leu Phe Pro Cys Asn Phe Ser Lys Asn Asp Val
                515                 520                 525

atg ctc agt gcc gtg gtc atg acc tac tgg acc aac ttc gcc aag act      2051
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Met Leu Ser Ala Val Val Met Thr Tyr Trp Thr Asn Phe Ala Lys Thr
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ggg gac ccc aac cag ccg gtg ccg cag gat acc aag ttc atc cac acc   2099
Gly Asp Pro Asn Gln Pro Val Pro Gln Asp Thr Lys Phe Ile His Thr
545   550   555   560

aag ccc aat cgc ttc gag gag gtg gtg tgg agc aaa ttc aac agc aag   2147
Lys Pro Asn Arg Phe Glu Glu Val Val Trp Ser Lys Phe Asn Ser Lys
                565   570   575

gag aag cag tat ctg cac ata ggc ctg aag cca cgc gtg cgt gac aac   2195
Glu Lys Gln Tyr Leu His Ile Gly Leu Lys Pro Arg Val Arg Asp Asn
                580   585   590

tac cgc gcc aac aag gtg gcc ttc tgg ctg gag ctc gtg ccc cac ctg   2243
Tyr Arg Ala Asn Lys Val Ala Phe Trp Leu Glu Leu Val Pro His Leu
                595   600   605

cac aac ctg cac acg gag ctc ttc acc acc acc acg cgc ctg cct ccc   2291
His Asn Leu His Thr Glu Leu Phe Thr Thr Thr Thr Arg Leu Pro Pro
610   615   620

tac gcc acg cgc tgg ccg cct cgt ccc ccc gct ggc gcc ccg ggc aca   2339
Tyr Ala Thr Arg Trp Pro Pro Arg Pro Pro Ala Gly Ala Pro Gly Thr
625   630   635   640

cgc cgg ccc ccg ccg cct gcc acc ctg cct ccc gag ccc gag ccc gag   2387
Arg Arg Pro Pro Pro Pro Ala Thr Leu Pro Pro Glu Pro Glu Pro Glu
                645   650   655

ccc ggc cca agg gcc tat gac cgc ttc ccc ggg gac tca cgg gac tac   2435
Pro Gly Pro Arg Ala Tyr Asp Arg Phe Pro Gly Asp Ser Arg Asp Tyr
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tcc acg gag ctg agc gtc acc gtg gcc gtg ggt gcc tcc ctc ctc ttc   2483
Ser Thr Glu Leu Ser Val Thr Val Ala Val Gly Ala Ser Leu Leu Phe
                675   680   685

ctc aac atc ctg gcc ttt gct gcc ctc tac tac aag cgg gac cgg cgg   2531
Leu Asn Ile Leu Ala Phe Ala Ala Leu Tyr Tyr Lys Arg Asp Arg Arg
                690   695   700

cag gag ctg cgg tgc agg cgg ctt agc cca cct ggc ggc tca ggc tct   2579
Gln Glu Leu Arg Cys Arg Arg Leu Ser Pro Pro Gly Gly Ser Gly Ser
705   710   715   720

ggc gtg cct ggt ggg ggc ccc ctg ctc ccc gcc gcg ggc cgt gag ctg   2627
Gly Val Pro Gly Gly Gly Pro Leu Leu Pro Ala Ala Gly Arg Glu Leu
                725   730   735

cca cca gag gag gag ctg gtg tca ctg cag ctg aag cgg ggt ggt ggc   2675
Pro Pro Glu Glu Glu Leu Val Ser Leu Gln Leu Lys Arg Gly Gly Gly
                740   745   750

gtc ggg gcg gac cct gcc gag gct ctg cgc cct gcc tgc ccg ccc gac   2723
Val Gly Ala Asp Pro Ala Glu Ala Leu Arg Pro Ala Cys Pro Pro Asp

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tac acc ctg gcc ctg cgc cgg gca ccg gac gat gtg cct ctc ttg gcc    2771
Tyr Thr Leu Ala Leu Arg Arg Ala Pro Asp Asp Val Pro Leu Leu Ala
    770                    775                    780

ccc ggg gcc ctg acc ctg ctg ccc agt ggc ctg ggg cca ccg cca ccc    2819
Pro Gly Ala Leu Thr Leu Leu Pro Ser Gly Leu Gly Pro Pro Pro Pro
785                    790                    795                    800

cca ccg ccc ccc tcc ctt cat ccc ttc ggg ccc ttc ccc ccg ccc cct    2867
Pro Pro Pro Pro Ser Leu His Pro Phe Gly Pro Phe Pro Pro Pro Pro
                       805                    810                    815

ccc acc gcc acc agc cac aac aac acg cta ccc cac ccc cac tcc acc    2915
Pro Thr Ala Thr Ser His Asn Asn Thr Leu Pro His Pro His Ser Thr
                   820                    825                    830

act cgg gta taggggtgg gtggggaggc cctcctcccc ggccctccct              2964
Thr Arg Val
        835


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<212> PRT
<213> Homo sapiens

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Leu Gly Ser Leu Gly Glu Glu Arg Phe Pro Val Val Asn Thr Ala Tyr
        35                  40                  45
Gly Arg Val Arg Gly Val Arg Arg Glu Leu Asn Asn Glu Ile Leu Gly
    50                  55                  60
Pro Val Val Gln Phe Leu Gly Val Pro Tyr Ala Thr Pro Pro Leu Gly
65                  70                  75                  80
Ala Arg Arg Phe Gln Pro Pro Glu Ala Pro Ala Ser Trp Pro Gly Val
                85                  90                  95
Arg Asn Ala Thr Thr Leu Pro Pro Ala Cys Pro Gln Asn Leu His Gly
            100                 105                 110
Ala Leu Pro Ala Ile Met Leu Pro Val Trp Phe Thr Asp Asn Leu Glu
        115                 120                 125
Ala Ala Ala Thr Tyr Val Gln Asn Gln Ser Glu Asp Cys Leu Tyr Leu
    130                 135                 140
Asn Leu Tyr Val Pro Thr Glu Asp Gly Pro Leu Thr Lys Lys Arg Asp
145                 150                 155                 160
Glu Ala Thr Leu Asn Pro Pro Asp Thr Asp Ile Arg Asp Pro Gly Lys
                165                 170                 175
Lys Pro Val Met Leu Phe Leu His Gly Gly Ser Tyr Met Glu Gly Thr
            180                 185                 190
Gly Asn Met Phe Asp Gly Ser Val Leu Ala Ala Tyr Gly Asn Val Ile
        195                 200                 205
Val Ala Thr Leu Asn Tyr Arg Leu Gly Val Leu Gly Phe Leu Ser Thr
    210                 215                 220
Gly Asp Gln Ala Ala Lys Gly Asn Tyr Gly Leu Leu Asp Gln Ile Gln
225                 230                 235                 240
Ala Leu Arg Trp Leu Ser Glu Asn Ile Ala His Phe Gly Gly Asp Pro
                245                 250                 255
Glu Arg Ile Thr Ile Phe Gly Ser Gly Ala Gly Ala Ser Cys Val Asn
            260                 265                 270
Leu Leu Ile Leu Ser His His Ser Glu Gly Leu Phe Gln Lys Ala Ile
        275                 280                 285
Ala Gln Ser Gly Thr Ala Ile Ser Ser Trp Ser Val Asn Tyr Gln Pro
    290                 295                 300
Leu Lys Tyr Thr Arg Leu Leu Ala Ala Lys Val Gly Cys Asp Arg Glu
305                 310                 315                 320
Asp Ser Ala Glu Ala Val Glu Cys Leu Arg Arg Lys Pro Ser Arg Glu
                325                 330                 335
Leu Val Asp Gln Asp Val Gln Pro Ala Arg Tyr His Ile Ala Phe Gly
            340                 345                 350
Pro Val Val Asp Gly Asp Val Val Pro Asp Asp Pro Glu Ile Leu Met
    355                 360                 365
Gln Gln Gly Glu Phe Leu Asn Tyr Asp Met Leu Ile Gly Val Asn Gln
    370                 375                 380
Gly Glu Gly Leu Lys Phe Val Glu Asp Ser Ala Glu Ser Glu Asp Gly
385                 390                 395                 400
Val Ser Ala Ser Ala Phe Asp Phe Thr Val Ser Asn Phe Val Asp Asn
            405                 410                 415
Leu Tyr Gly Tyr Pro Glu Gly Lys Asp Val Leu Arg Glu Thr Ile Lys
        420                 425                 430
Phe Met Tyr Thr Asp Trp Ala Asp Arg Asp Asn Gly Glu Met Arg Arg
        435                 440                 445
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Lys Thr Leu Leu Ala Leu Phe Thr Asp His Gln Trp Val Ala Pro Ala
    450             455             460
Val Ala Thr Ala Lys Leu His Ala Asp Tyr Gln Ser Pro Val Tyr Phe
465             470             475             480
Tyr Thr Phe Tyr His His Cys Gln Ala Glu Gly Arg Pro Glu Trp Ala
            485             490             495
Asp Ala Ala His Gly Asp Glu Leu Pro Tyr Val Phe Gly Val Pro Met
            500             505             510
Val Gly Ala Thr Asp Leu Phe Pro Cys Asn Phe Ser Lys Asn Asp Val
    515             520             525
Met Leu Ser Ala Val Val Met Thr Tyr Trp Thr Asn Phe Ala Lys Thr
    530             535             540
Gly Asp Pro Asn Gln Pro Val Pro Gln Asp Thr Lys Phe Ile His Thr
545             550             555             560
Lys Pro Asn Arg Phe Glu Glu Val Val Trp Ser Lys Phe Asn Ser Lys
            565             570             575
Glu Lys Gln Tyr Leu His Ile Gly Leu Lys Pro Arg Val Arg Asp Asn
            580             585             590
Tyr Arg Ala Asn Lys Val Ala Phe Trp Leu Glu Leu Val Pro His Leu
    595             600             605
His Asn Leu His Thr Glu Leu Phe Thr Thr Thr Thr Arg Leu Pro Pro
    610             615             620
Tyr Ala Thr Arg Trp Pro Pro Arg Pro Pro Ala Gly Ala Pro Gly Thr
625             630             635             640
Arg Arg Pro Pro Pro Pro Ala Thr Leu Pro Pro Glu Pro Glu Pro Glu
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Pro Gly Pro Arg Ala Tyr Asp Arg Phe Pro Gly Asp Ser Arg Asp Tyr
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Ser Thr Glu Leu Ser Val Thr Val Ala Val Gly Ala Ser Leu Leu Phe
            675             680             685
Leu Asn Ile Leu Ala Phe Ala Ala Leu Tyr Tyr Lys Arg Asp Arg Arg
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Gln Glu Leu Arg Cys Arg Arg Leu Ser Pro Pro Gly Gly Ser Gly Ser
705             710             715             720
Gly Val Pro Gly Gly Gly Pro Leu Leu Pro Ala Ala Gly Arg Glu Leu
            725             730             735
Pro Pro Glu Glu Glu Leu Val Ser Leu Gln Leu Lys Arg Gly Gly Gly
            740             745             750
Val Gly Ala Asp Pro Ala Glu Ala Leu Arg Pro Ala Cys Pro Pro Asp
    755             760             765
Tyr Thr Leu Ala Leu Arg Arg Ala Pro Asp Asp Val Pro Leu Leu Ala
    770             775             780
Pro Gly Ala Leu Thr Leu Leu Pro Ser Gly Leu Gly Pro Pro Pro Pro
785             790             795             800
Pro Pro Pro Pro Ser Leu His Pro Phe Gly Pro Phe Pro Pro Pro Pro
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Thr Arg Val
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<213> Artificial Sequence

<220>
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1   5   10   15
Asn Glu Lys Thr Asp Asn Gly Glu Gln Ser Val Tyr Ser Phe Leu Gly
            20   25   30
Ile Pro Tyr Ala Glu Pro Pro Val Gly Asn Leu Arg Phe Lys Ala Pro

```
                35                      40                      45
Gln Pro Tyr Lys Glu Pro Trp Ser Asp Val Leu Asp Ala Thr Lys Tyr
        50                  55                  60
Pro Pro Ser Cys Leu Gln Asp Asp Asp Phe Gly Phe Ser Leu Ser Asp
65                  70                  75                      80
Leu Lys Val Ala Leu Lys Met Leu Ser Leu Gly Trp Asn Lys Leu Val
            85                  90                      95
Gly Leu Lys Leu Ser Glu Asp Cys Leu Tyr Leu Asn Val Tyr Thr Pro
            100                 105                 110
Lys Asn Thr Lys Pro Asn Ser Lys Leu Pro Val Met Val Trp Ile His
            115                 120                 125
Gly Gly Gly Phe Met Phe Gly Ser Gly His Ser Leu Pro Leu Ser Leu
        130                 135                 140
Tyr Asp Gly Glu Ser Leu Ala Arg Glu Gly Asn Val Ile Val Val Ser
145                 150                 155                 160
Ile Asn Tyr Arg Leu Gly Pro Leu Gly Phe Leu Ser Thr Gly Asp Asp
            165                 170                 175
Lys Leu Pro Gly Ser Gly Asn Tyr Gly Leu Leu Leu Asp Gln Arg Leu
            180                 185                 190
Ala Leu Lys Trp Val Gln Asp Asn Ile Ala Ala Phe Gly Gly Asp Pro
        195                 200                 205
Asn Ser Val Thr Ile Phe Gly Glu Ser Ala Gly Ala Ala Ser Val Ser
    210                 215                 220
Leu Leu Leu Leu Ser Asn Gly Gly Asp Asn Pro Pro Ser Ser Lys Gly
225                 230                 235                 240
Leu Phe His Arg Ala Ile Ser Gln Ser Gly Ser Ala Leu Ser Pro Trp
            245                 250                 255
Ala Ile Gln Ser Glu Ser Asn Ala Arg Gly Arg Ala Lys Glu Leu Ala
        260                 265                 270
Arg Leu Leu Gly Cys Asn Glu Thr Ser Ser Ser Glu Leu Leu Asp Cys
    275                 280                 285
Leu Arg Ser Lys Ser Ala Glu Glu Leu Leu Glu Ala Thr Arg Ser Phe
    290                 295                 300
Leu Leu Phe Glu Tyr Val Pro Phe Leu Pro Leu Phe Leu Ala Phe Gly
305                 310                 315                 320
Pro Val Val Asp Gly Asp Asp Ala Pro Glu Ala Phe Ile Pro Glu Asp
            325                 330                 335
Pro Glu Glu Leu Ile Lys Glu Gly Lys Phe Ala Asp Val Pro Tyr Leu
        340                 345                 350
Ile Gly Val Thr Lys Asp Glu Gly Gly Tyr Phe Ala Ala Met Leu Leu
        355                 360                 365
Asn Ala Ser Ser Lys Gly Glu Asp Glu Leu Lys Lys Glu Thr Asn Pro
    370                 375                 380
Asp Val Trp Leu Glu Leu Leu Lys Tyr Leu Leu Phe Tyr Ala Ser Glu
385                 390                 395                 400
Ala Leu Asn Ile Lys Asp Met Asp Asp Leu Ala Asp Lys Val Leu Glu
            405                 410                 415
Lys Tyr Pro Gly Asp Val Asp Asp Phe Ser Val Glu Ser Arg Lys Pro
        420                 425                 430
Asn Leu Gln Asp Met Leu Thr Asp Leu Leu Phe Lys Cys Pro Thr Arg
        435                 440                 445
Val Ala Ala Asp Leu His Ala Lys His Gly Gly Ser Pro Val Tyr Ala
    450                 455                 460
Tyr Val Phe Asp His Pro Ala Ser Phe Gly Ile Gly Gln Phe Leu Ala
465                 470                 475                 480
Lys Arg Val Asp Pro Glu Phe Gly Gly Ala Val His Gly Asp Glu Ile
            485                 490                 495
```

```
Phe Phe Val Phe Gly Asn Pro Leu Leu Lys Glu Gln Leu Tyr Lys Ala
            500                 505                 510
Thr Glu Glu Glu Glu Lys Ser Ser Ser Lys Thr Met Met Asn Tyr Trp
        515                 520                 525
Ala Asn Phe Ala Lys Thr Gly Asn Pro Asn Asn Gly Thr Ser Asn Gly
    530                 535                 540
Leu Val Val Trp Pro Lys Tyr Thr Ser Glu Glu Gln Lys Tyr Ser Leu
545                 550                 555                 560
Leu Ile Leu Leu Thr Thr Ile Thr Ala Gln Lys Leu Lys Ala Arg Asp
                565                 570                 575
Pro Arg Lys Val Leu Cys Asn Phe Trp
                580                 585


<210> 5
<211> 836
<212> PRT
<213> Rattus norvegicus

<400> 5
Met Trp Leu Leu Ala Leu Cys Leu Val Gly Leu Ala Gly Ala Gln Arg
  1               5                  10                  15
Gly Gly Gly Gly Pro Gly Gly Gly Ala Pro Gly Gly Pro Gly Leu Gly
                20                  25                  30
Leu Gly Ser Leu Gly Glu Glu Arg Phe Pro Val Val Asn Thr Ala Tyr
            35                  40                  45
Gly Arg Val Arg Gly Val Arg Arg Glu Leu Asn Asn Glu Ile Leu Gly
        50                  55                  60
Pro Val Val Gln Phe Leu Gly Val Pro Tyr Ala Thr Pro Pro Leu Gly
65                  70                  75                  80
Ala Arg Arg Phe Gln Pro Pro Glu Ala Pro Ala Ser Trp Pro Gly Val
                85                  90                  95
Arg Asn Ala Thr Thr Leu Pro Pro Ala Cys Pro Gln Asn Leu His Gly
            100                 105                 110
Ala Leu Pro Ala Ile Met Leu Pro Val Trp Phe Thr Asp Asn Leu Glu
        115                 120                 125
Ala Ala Ala Thr Tyr Val Gln Asn Gln Ser Glu Asp Cys Leu Tyr Leu
    130                 135                 140
Asn Leu Tyr Val Pro Thr Glu Asp Gly Pro Leu Thr Lys Lys Arg Asp
145                 150                 155                 160
Glu Ala Thr Leu Asn Pro Pro Asp Thr Asp Ile Arg Asp Ser Gly Lys
                165                 170                 175
Lys Pro Val Met Leu Phe Leu His Gly Gly Ser Tyr Met Glu Gly Thr
                180                 185                 190
Gly Asn Met Phe Asp Gly Ser Val Leu Ala Ala Tyr Gly Asn Val Ile
            195                 200                 205
Val Ala Thr Leu Asn Tyr Arg Leu Gly Val Leu Gly Phe Leu Ser Thr
    210                 215                 220
Gly Asp Gln Ala Ala Lys Gly Asn Tyr Gly Leu Leu Asp Gln Ile Gln
225                 230                 235                 240
Ala Leu Arg Trp Leu Ser Glu Asn Ile Ala His Phe Gly Gly Asp Pro
                245                 250                 255
Glu Arg Ile Thr Ile Phe Gly Ser Gly Ala Gly Ala Ser Cys Val Asn
            260                 265                 270
Leu Leu Ile Leu Ser His His Ser Glu Gly Leu Phe Gln Lys Ala Ile
            275                 280                 285
Ala Gln Ser Gly Thr Ala Ile Ser Ser Trp Ser Val Asn Tyr Gln Pro
    290                 295                 300
```

```
Leu Lys Tyr Thr Arg Leu Leu Ala Ala Lys Val Gly Cys Asp Arg Glu
305               310               315               320
Asp Ser Thr Glu Ala Val Glu Cys Leu Arg Arg Lys Ser Ser Arg Glu
                325               330               335
Leu Val Asp Gln Asp Val Gln Pro Ala Arg Tyr His Ile Ala Phe Gly
            340               345               350
Pro Val Val Asp Gly Asp Val Val Pro Asp Asp Pro Glu Ile Leu Met
        355               360               365
Gln Gln Gly Glu Phe Leu Asn Tyr Asp Met Leu Ile Gly Val Asn Gln
    370               375               380
Gly Glu Gly Leu Lys Phe Val Glu Asp Ser Ala Glu Ser Glu Asp Gly
385               390               395               400
Val Ser Ala Ser Ala Phe Asp Phe Thr Val Ser Asn Phe Val Asp Asn
                405               410               415
Leu Tyr Gly Tyr Pro Glu Gly Lys Asp Val Leu Arg Glu Thr Ile Lys
            420               425               430
Phe Met Tyr Thr Asp Trp Ala Asp Arg Asp Asn Gly Glu Met Arg Arg
        435               440               445
Lys Thr Leu Leu Ala Leu Phe Thr Asp His Gln Trp Val Ala Pro Ala
    450               455               460
Val Ala Thr Ala Lys Leu His Ala Asp Tyr Gln Ser Pro Val Tyr Phe
465               470               475               480
Tyr Thr Phe Tyr His His Cys Gln Ala Glu Gly Arg Pro Glu Trp Ala
                485               490               495
Asp Ala Ala His Gly Asp Glu Leu Pro Tyr Val Phe Gly Val Pro Met
            500               505               510
Val Gly Ala Thr Asp Leu Phe Pro Cys Asn Phe Ser Lys Asn Asp Val
        515               520               525
Met Leu Ser Ala Val Val Met Thr Tyr Trp Thr Asn Phe Ala Lys Thr
    530               535               540
Gly Asp Pro Asn Gln Pro Val Pro Gln Asp Thr Lys Phe Ile His Thr
545               550               555               560
Lys Pro Asn Arg Phe Glu Glu Val Val Trp Ser Lys Phe Asn Ser Lys
                565               570               575
Glu Lys Gln Tyr Leu His Ile Gly Leu Lys Pro Arg Val Arg Asp Asn
            580               585               590
Tyr Arg Ala Asn Lys Val Ala Phe Trp Leu Glu Leu Val Pro His Leu
    595               600               605
His Asn Leu His Thr Glu Leu Phe Thr Thr Thr Thr Arg Leu Pro Pro
    610               615               620
Tyr Ala Thr Arg Trp Pro Pro Arg Thr Pro Gly Pro Gly Thr Ser Gly
625               630               635               640
Thr Arg Arg Pro Pro Pro Pro Ala Thr Leu Pro Pro Glu Ser Asp Ile
            645               650               655
Asp Leu Gly Pro Arg Ala Tyr Asp Arg Phe Pro Gly Asp Ser Arg Asp
            660               665               670
Tyr Ser Thr Glu Leu Ser Val Thr Val Ala Val Gly Ala Ser Leu Leu
        675               680               685
Phe Leu Asn Ile Leu Ala Phe Ala Ala Leu Tyr Tyr Lys Arg Asp Arg
    690               695               700
Arg Gln Glu Leu Arg Cys Arg Arg Leu Ser Pro Pro Gly Gly Ser Gly
705               710               715               720
Ser Gly Val Pro Gly Gly Gly Pro Leu Leu Pro Thr Ala Gly Arg Glu
            725               730               735
Leu Pro Pro Glu Glu Glu Leu Val Ser Leu Gln Leu Lys Arg Gly Gly
            740               745               750
Gly Val Gly Ala Asp Pro Ala Glu Ala Leu Arg Pro Ala Cys Pro Pro
```

```
              755                    760                    765
Asp Tyr Thr Leu Ala Leu Arg Arg Ala Pro Asp Asp Val Pro Leu Leu
    770                 775                 780
Ala Pro Gly Ala Leu Thr Leu Leu Pro Ser Gly Leu Gly Pro Pro Pro
785                 790                 795                     800
Pro Pro Pro Pro Pro Ser Leu His Pro Phe Gly Pro Phe Pro Pro Pro
                805                 810                 815
Pro Pro Thr Ala Thr Ser His Asn Asn Thr Leu Pro His Pro His Ser
            820                 825                 830
Thr Thr Arg Val
            835
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<210> 6
<211> 550
<212> PRT
<213> Homo sapiens

<400> 6

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Lys Ala Ile Ala Gln Ser Gly Thr Ala Ile Ser Ser Trp Ser Val Asn
1                   5                   10                  15
Tyr Gln Pro Leu Lys Tyr Thr Arg Leu Leu Ala Ala Lys Val Gly Cys
            20                  25                  30
Asp Arg Glu Asp Ser Ala Glu Ala Val Glu Cys Leu Arg Arg Lys Pro
        35                  40                  45
Ser Arg Glu Leu Val Asp Gln Asp Val Gln Pro Ala Arg Tyr His Ile
    50                  55                  60
Ala Phe Gly Pro Val Val Asp Gly Asp Val Val Pro Asp Asp Pro Glu
65                  70                  75                  80
Ile Leu Met Gln Gln Gly Glu Phe Leu Asn Tyr Asp Met Leu Ile Gly
                85                  90                  95
Val Asn Gln Gly Glu Gly Leu Lys Phe Val Glu Asp Ser Ala Glu Ser
            100                 105                 110
Glu Asp Gly Val Ser Ala Ser Ala Phe Asp Phe Thr Val Ser Asn Phe
        115                 120                 125
Val Asp Asn Leu Tyr Gly Tyr Pro Glu Gly Lys Asp Val Leu Arg Glu
    130                 135                 140
Thr Ile Lys Phe Met Tyr Thr Asp Trp Ala Asp Arg Asp Asn Gly Glu
145                 150                 155                 160
Met Arg Arg Lys Thr Leu Leu Ala Leu Phe Thr Asp His Gln Trp Val
                165                 170                 175
Ala Pro Ala Val Ala Thr Ala Lys Leu His Ala Asp Tyr Gln Ser Pro
            180                 185                 190
Val Tyr Phe Tyr Thr Phe Tyr His His Cys Gln Ala Glu Gly Arg Pro
            195                 200                 205
Glu Trp Ala Asp Ala Ala His Gly Asp Glu Leu Pro Tyr Val Phe Gly
    210                 215                 220
Val Pro Met Val Gly Ala Thr Asp Leu Phe Pro Cys Asn Phe Ser Lys
225                 230                 235                 240
Asn Asp Val Met Leu Ser Ala Val Val Met Thr Tyr Trp Thr Asn Phe
                245                 250                 255
Ala Lys Thr Gly Asp Pro Asn Gln Pro Val Pro Gln Asp Thr Lys Phe
            260                 265                 270
Ile His Thr Lys Pro Asn Arg Phe Glu Glu Val Val Trp Ser Lys Phe
            275                 280                 285
Asn Ser Lys Glu Lys Gln Tyr Leu His Ile Gly Leu Lys Pro Arg Val
    290                 295                 300
Arg Asp Asn Tyr Arg Ala Asn Lys Val Ala Phe Trp Leu Glu Leu Val
```

```
305                     310                     315                     320
Pro His Leu His Asn Leu His Thr Glu Leu Phe Thr Thr Thr Thr Arg
                 325                     330                     335
Leu Pro Pro Tyr Ala Thr Arg Trp Pro Pro Arg Pro Pro Ala Gly Ala
             340                     345                     350
Pro Gly Thr Arg Arg Pro Pro Pro Pro Ala Thr Leu Pro Pro Glu Pro
             355                     360                     365
Glu Pro Glu Pro Gly Pro Arg Ala Tyr Asp Arg Phe Pro Gly Asp Ser
         370                     375                     380
Arg Asp Tyr Ser Thr Glu Leu Ser Val Thr Val Ala Val Gly Ala Ser
385                     390                     395                     400
Leu Leu Phe Leu Asn Ile Leu Ala Phe Ala Ala Leu Tyr Tyr Lys Arg
                 405                     410                     415
Asp Arg Arg Gln Glu Leu Arg Cys Arg Arg Leu Ser Pro Pro Gly Gly
             420                     425                     430
Ser Gly Ser Gly Val Pro Gly Gly Gly Pro Leu Leu Pro Ala Ala Gly
             435                     440                     445
Arg Glu Leu Pro Pro Glu Glu Glu Leu Val Ser Leu Gln Leu Lys Arg
         450                     455                     460
Gly Gly Gly Val Gly Ala Asp Pro Ala Glu Ala Leu Arg Pro Ala Cys
465                     470                     475                     480
Pro Pro Asp Tyr Thr Leu Ala Leu Arg Arg Ala Pro Asp Asp Val Pro
                 485                     490                     495
Leu Leu Ala Pro Gly Ala Leu Thr Leu Leu Pro Ser Gly Leu Gly Pro
             500                     505                     510
Pro Pro Pro Pro Pro Pro Pro Ser Leu His Pro Phe Gly Pro Phe Pro
             515                     520                     525
Pro Pro Pro Pro Thr Ala Thr Ser His Asn Asn Thr Leu Pro His Pro
         530                     535                     540
His Ser Thr Thr Arg Val
545                 550
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<210> 7
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Exemplary motif

<221> VARIANT
<222> 2
<223> Xaa = Gly or Arg

<221> VARIANT
<222> 4-7, 9, 11, 13
<223> Xaa = Any amino acid

<221> VARIANT
<222> 8
<223> Xaa = Leu, Ile, Val, or Met

<221> VARIANT
<222> 10
<223> Xaa = Leu, Ile, or Val

<221> VARIANT

```
<222> 15
<223> Xaa = Ser, Thr, Ala, or Gly

<400> 7
Phe Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Ser Xaa Gly
 1               5                   10                  15


<210> 8
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Signature domain

<221> VARIANT
<222> 3, 7
<223> Xaa = any amino acid

<400> 8
Glu Asp Xaa Cys Leu Tyr Xaa
 1               5
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